

APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

WIRELESS MUSIC DEVICE AND METHOD THEREFOR

Inventor(s): David P. Henzerling

Prepared by: Kenneth M. Seddon,
Patent Attorney

intel®

Intel Corporation
5000 W. Chandler Blvd., CH6-404
Chandler, AZ 85226-3699
Phone: (480) 554-9732
Facsimile: (480) 554-7738

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WIRELESS MUSIC DEVICE AND METHOD THEREFOR

BACKGROUND

5 In order to provide consumers with greater flexibility in the music that they
listen to, for example, while in an automobile, devices have been developed that
allow a user to store music files into memory that may be played back as the user
desires. The typical device may include hard disk drives that may be removed to be
programmed. The hard disk may be connected to a personal computer (PC) or a
10 music system so that the music may be transferred from a compact disc to the
hard disk drives. The hard disk drives may also be programmed with music files
(e.g., MP3 files) that are downloaded from the internet.

However, there are several drawbacks to music players that rely on hard disk
drives to store music. To begin, the hard disk drives are expensive and may not be
15 well suited for all applications. For example, if the music player is used in an
automobile environmental conditions such as temperature and vibrations may affect
the reliability and performance of the disk drives. Also, the disk drives must be
removed from the player (e.g., from the automobile) and hard wired to a personal
computer if the music files are to be updated.

20 Another alternative music system, allow a user to subscribe to a music
service that may provide music to a user through a satellite network. However,
such systems do not allow the user to select the music to be played as the service,

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not the user, determines what music is to be played. Thus, there is a continuing need to provide music to a user.

BRIEF DESCRIPTION OF THE DRAWINGS

5 The subject matter regarded as the invention is particularly pointed out and distinctly claimed in the concluding portion of the specification. The invention, however, both as to organization and method of operation, together with objects, features, and advantages thereof, may best be understood by reference to the following detailed description when read with the accompanying drawings in which:

10 FIG. 1 is a block diagram representation of a wireless network adapted to provide requested music files in accordance with embodiments of the present invention; and

FIG. 2 is a block diagram representation of a peer-to-peer network in accordance with an alternative embodiment of the present invention.

15 It will be appreciated that for simplicity and clarity of illustration, elements illustrated in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements are exaggerated relative to other elements for clarity. Further, where considered appropriate, reference numerals have been 20 repeated among the figures to indicate corresponding or analogous elements.

DETAILED DESCRIPTION

In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the invention. However, it will be understood by those skilled in the art that the present invention may be practiced 5 without these specific details. In other instances, well-known methods, procedures, components and circuits have not been described in detail so as not to obscure the present invention.

Unless specifically stated otherwise, as apparent from the following discussions, it is appreciated that throughout the specification discussions utilizing 10 terms such as "processing," "computing," "calculating," "determining," or the like, refer to the action and/or processes of a computer or computing system, or similar electronic computing device, that manipulate and/or transform data represented as physical, such as electronic, quantities within the computing system's registers and/or memories into other data similarly represented as physical quantities within 15 the computing system's memories, registers or other such information storage, transmission or display devices.

Embodiments of the present invention may include apparatuses for performing the operations herein. This apparatus may be specially constructed for the desired purposes, or it may comprise a general purpose computing device 20 selectively activated or reconfigured by a program stored in the device. Such a program may be stored on a storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, magnetic-optical disks,

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read-only memories (ROMs), random access memories (RAMs), electrically programmable read-only memories (EPROMs), electrically erasable and programmable read only memories (EEPROMs), magnetic or optical cards, or any other type of media suitable for storing electronic instructions, and capable of being

5 coupled to a system bus for a computing device.

The processes and displays presented herein are not inherently related to any particular computing device or other apparatus. Various general purpose systems may be used with programs in accordance with the teachings herein, or it may prove convenient to construct a more specialized apparatus to perform the desired

10 method. The desired structure for a variety of these systems will appear from the description below. In addition, embodiments of the present invention are not described with reference to any particular programming language. It will be appreciated that a variety of programming languages may be used to implement the teachings of the invention as described herein.

15 In the following description and claims, the terms "coupled" and "connected," along with their derivatives, may be used. It should be understood that these terms are not intended as synonyms for each other. Rather, in particular embodiments, "connected" may be used to indicate that two or more elements are in direct physical or electrical contact with each other. "Coupled" may mean that two or more elements are

20 in direct physical or electrical contact. However, "coupled" may also mean that two or more elements are not in direct contact with each other, but yet still co-operate or interact with each other.

Turning to FIG. 1, an embodiment 100 in accordance with the present invention is described. Embodiment 100 may comprise a music player 50 that may be portable (e.g. part of a cell phone, a two-way radio communication system, a one-way pager, a two-way pager, a personal communication system (PCS), a portable computer, or the like) or may be mounted in a mobile device such as an automobile. Although it should be understood that the scope and application of the present invention is in no way limited to these examples as the scope of the present invention is intended to include device that are not considered portable as well.

Music player 50 may comprise a transceiver 51 that may be used to request and/or receive music files requested by a user. Although the scope of the present invention is not limited in this respect, transceiver 51 may include a transmitter and a receiver that may be used to wirelessly communicate with a network. Alternatively, music player may only have a wireless transmitter or a wireless receiver.

Music player 50 may use a variety of communication techniques to request or receive music files. Although the scope of the present invention is not limited in this respect, types of cellular radiotelephone communication systems intended to be within the scope of the present invention include, although not limited to, Code Division Multiple Access (CDMA) cellular radiotelephone communication systems, Global System for Mobile Communications (GSM) cellular radiotelephone systems, North American Digital Cellular (NADC) cellular radiotelephone systems, Time Division Multiple Access (TDMA) systems, Extended-TDMA (E-TDMA) cellular radiotelephone systems, Bluetooth™, third generation (3G) systems like Wide-band CDMA (WCDMA),

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CDMA-2000, and the like.

If a user would like to hear some music that is not already stored within music player 50 (e.g., within memory 52), transceiver 51 may use a wireless communication protocol to request a music file stored on either a personal computer 60, the internet 71, 5 or another server 80. However, it should be understood that the scope of the present invention is not limited to the source of the requested music file. In alternative embodiments, the music file may come from a stereo system or from another music player that is part of a peer-to-peer system.

As shown in FIG. 1, personal computer 60 may comprise a transceiver 67 that 10 may be used to provide the requested music file to music player 50. Although the scope of the present invention is not limited in this respect, personal computer 60 may be a general processing computer used to execute user applications. Accordingly, personal computer 60 may have the requested music file on its storage device (e.g. a hard drive, compact disk, etc.). However, personal computer 60 may also be a terminal 15 or portal device that is connected to a network or the internet 71. In such an embodiment, personal computer 60 may access and retrieve the music file requested by music player 50.

In yet another embodiment, a user may store selected music files on a database within the internet 71 or within a database on a server 80. This may be advantageous if 20 music player 50 may have greater or faster accessibility to server 80 rather than personal computer 60. Storing music files on server 80 may also be desirable if the music files are to be shared with other users or is the user is requesting the music file

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from a service that sells the music, although the scope of the present invention is not limited in this respect.

A method in accordance with an embodiment of the present invention is now provided. A user of music player 50 may request a music file that is not currently stored within memory 52. In this particular example, the user may make the request from an automobile. This request may be made directly to personal computer 60 or server 80, or to a service provider through a base station 85. Personal computer 60 may then provide the requested music file through a wireless communication, such as WCDMA (indicated in FIG. 1 with an arrow 61). Music player 50 may receive the requested music file through the wireless communication and store the music file in memory 52. Although the scope of the present invention is not limited in this respect, memory 52 may comprise volatile memory, such as static random access memory (SRAM), dynamic RAM (DRAM), etc., or non-volatile memory such as flash, EEPROM, etc. Once stored in memory 52, the user may play the music file at his leisure.

Referring now to FIG. 2, an alternative embodiment of the present invention. Instead of requesting music files from a computer, a server, or the internet, music player 50 may receive a requested music file from other music players in a peer-to-peer network. For example, music players 50, and 251-252 may be in different automobiles that are in communication with other in a peer-to-peer network. Accordingly, music player 50 may transmit a request for a music file to music player 251 (indicated in FIG. 2 with an arrow 90). If music player 251 does not have the requested song or file, it may transmit a request to music player 252 (arrow 91). If music player 252 has the

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requested song, it may then transmitted the requested music file to music player 50 (arrow 92). It should be understood that the scope of the present invention is not limited by the number of music players that are in the peer-to-peer network, and not all of them need me mobile (e.g., within an automobile). In addition, the peer-to-peer 5 network may also comprise all or some of the components shown in FIG. 1. For example, the peer-to-peer network may also include person computers, servers, base stations, or portals to the internet.

While certain features of the invention have been illustrated and described herein, many modifications, substitutions, changes, and equivalents will now occur 10 to those skilled in the art. For example, a user may request and receive more than one music file (e.g., all the songs on an album). It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the invention.